SOV/78-4-2-23/40

Investigation of the State of Water in Anhydrous Solutions of Uranylnitrate by the Method of Infrared Spectroscopy

The spectra were recorded on the infrared spectrometer D-209 by quartz and NaCl-prisms. The solutions to be examined were produced by the dilution of hexa, tri, and dihydrates of uranylnitrate in suitable solvents, as ether, acetone, and methylethylketone. The infrared absorption spectra of the hexa, tri, and dihydrates of uranylnitrate in ether were recorded in the zone 1.3-2.2μ. The results show that two molecules of water are complexly bound in uranylnitrate and are considerably deformed. The deformation degree depends on the nature of the solvent. The remaining water molecules of uranylnitrate in organic solvents are bound less complexly to uranylnitrate and show a comparatively slight degree of deformation. The spectra of uranylnitrate in acetone and methylethylketone show analogous phenomena. There are 4 figures and 5 references, 2 of which are Soviet.

SUBMITTED: December 12, 1957

Card 2/2

L 04625-67 EWT(m) GD

ACC NR: AT6029632 SOURCE CODE: UR/0000/66/000/000/0235/0241

AUTHOR: Darenskaya, N. G.; Derbeneva, N. I.; Nefedov, Yu. G.; Ryzhov, N. I.; Seraya, V. M.; Domshlak, M. P. (Professor)

36
B+1

ORG: none

TITLE: The RBE of high-energy protons

SOURCE: Voprosy obshchey radiobiologii (Problems of general radiobiology). Moscow, Atomizdat, 1966, 235-241

TOPIC TAGS: proton, radiation biologic effect, dog, rat, mouse, relative biologic efficiency

ABSTRACT: The RBE of 510-, 240-, and 126-Mev protons was studied in comparative experiments with dogs, rats, and mice. A proton flux generated by the OIYaI synchrocyclotron at Dubna was used. Polyethylene and lead absorbers were used to decrease proton energies from 660 Mev, at the same time increasing the beam diameter to enable irradiation of large animals. The dose rate varied from 0.3—1.5 rad/sec. Rats and mice were irradiated in a rotating chamber and dogs were irradiated from two sides in order to equalize the dose distribution. RBE values were determined during both single and multiple irradiation: during multiple irradiation dogs were exposed 8—19 times in the course of 2—5 weeks for total doses of 200-690 rad, and rats were exposed 20 times in the course of 4 weeks for total doses of 750 and 1115 rad. Single

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ACC NR: AT6029632

proton doses amounted to 136—550 rad for dogs and 100—1200 rad for rats and mice. It was observed that irradiation of dogs with small doses of protons altered their immunological reactivity, as indicated by the depressed phagocytic activity of neutrophils in the first days after irradiation. In proton-irradiated dogs a decrease in oxidative processes was also noted; CO_2 liberation and oxygen consumption dropped 35—50% shortly after irradiation and remained depressed until the animal died or until most radiation sickness symptoms disappeared. Experimental results showed the same periods of appearance of various symptoms of radiation sickness (such as increased temperature, diarrhea, changes in peripheral blood, etc.) for proton- and gamma-irradiated dogs (except that dogs irradiated once with 510-Mev protons developed symptoms somewhat earlier). RBE values for protons in the energy range indicated were based on comparison of percentage survival, duration of life of surviving animals, severity of individual symptoms and results of laboratory tests. It was concluded that the RBE for dogs during multiple irradiation with 510- and 126-Mev protons is 1.0. For single irradiation, the RBE is 1.15 for 510- and 240-Mev protons, and 1 for 126-Mev protons. It should be noted that these RBE determinations are made on the basis of direct radiation effects, and may have to be altered for long-term radiation effects. Analogous experiments were conducted with white rats weighing 180—220 g and mice weighing 18—22 g. It was found that the RBE of 510-, and 240-, and 126-Mev protons for rats was 0.75, 0.73 and 0.69, respectively, based on the $LD_{50/30}$. The RBE based on the $LD_{100/30}$ was 0.75 for 510-Mev protons, and 0.79 for 240- and 126-Mev protons. For mice the RBE value for 126-Mev protons was set

L 04625-67
ACC NR: AT6029632

at 0.7. The difference in RBE values obtained for small and large animals is considerable, and indicates the danger of extrapolating data from small animals for study of the spaceflight radiation hazard to man. Orig. art. has: 2 figures and 2 tables. [JS]

SUB CODE: 06/ SUBM DATE: 23Apr66/ ORIG REF: 006/ OTH REF: 006/ ATD PRESS: 5063

Card 3/3

L 11275-67 EWT(1)/ SCTB DD/HW

ACC NR: AT6029633 SOURCE CODE: UR/0000/66/000/000/0242/0254

AUTHOR: Lebedinskiy, A. V. (deceased); Nefedov, Yu. G.; Domshlak, M. P.; Kompaniyskaya, N. N.; Moskalev, Yu. I.; Ryzhov, N. I.; Daronskaya, N. G.; Bibikova, A. F.; Ganshina, T. N.; Lobodov, B. I.; L'vitsyna, G. M.; Shashkov, I. F.; Derbenova, N. I.; Gerasimova, G. K.

ORG: none

TITLE: Model investigations of cosmic radiation biologic effect

SOURCE: Voprosy obshchey radiobiologii (Problems of general radiobiology). Moscow, Atomizdat, 1966, 242-254

TOPIC TAGS: dog, rat, induced radiation effect, cosmic radiation biologic effect, proton radiation biologic effect, relative biologic efficiency

ABSTRACT: With space flights of longer duration, cosmic rays, radiation belts and solar flares present an increasing danger to astronauts. However, relatively little is known of the biologic effect of cosmic radiation and its components, particularly high energy protons. In the present study the RBE of high energy protons was compared in large laboratory animals (dogs) and small laboratory animals (rats) to determine possible RBE differences. In a series of experiments groups of dogs were irradiated with high energy protons and X-irradiation (or gamma irradiation) in fractional and

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L 11275-67

ACC NR: AT6029633 0

single doses of 250 to 650 rads; groups of rats (Wistar line) were also irradiated in fractional and single doses of 300 to 1200 rads. A synchrocyclotron was used for proton irradiation (510 Mev, field diameter 40 cm, dose rate of 1 rad/sec). Clinical symptoms, histological investigations, EEG data, mean survival periods, and post mortem examinations served as indices. Results show that with fractional dose irradiation of dogs, the RBE of proton irradiation (510 Mev) and X-irradiation (180 kv) is the same (1.0). With fractional irradiation of rats, the RBE of proton irradiation is 0.8. With single dose irradiation of dogs, the RBE of protons is 1.15 compared to gamma irradiation. With single dose irradiation of rats, the RBE of protons is 0.75 compared to gamma irradiation. No conclusions are drawn. Orig. art. has: 4 tables and 6 figures.

SUB CODE: 06/ SUBM DATE: 23Apr66/ ORIG REF: 004/ OTH REF: 004

Card 2/2 jb

DERBINEVA, N.N.

Life cycle of Haplothrips yuccae Sav. (Thysanoptera, Phloeothripidae). Ent.obozr. 38 no.1:64-81 '59. (MIRA 12:4)

1. Zoologicheskiy institut AN SSSR, Leningrad.
(Crimea--Thrips) (Yucca--Diseases and pests)

DERBENEVA, N.N.

A new species of the genus Aeolothrips Hal (Thysanoptera, Aeolothripidae) from the Crimea. Ent. oboz. 38 no.4:847-850 '59 (MIRA 13:3)

1. Zoologicheskiy institut AN SSSR, Leningrad.
(Crimea--Thrips)

ARNOL'DI, L.V.; BORKHSENIUS, N.S.; GUR'YEVA, Ye.L.; DERBENEVA, N.N.; YEMEL'YANOV, A.F.; KERZHNER, I.M.; KUZNETSOV, V.I.; LISINA, L.M.; MISHCHENKO, L.L.; NARCHUK, E.P.; SHAPIRO, I.D.; SHAPOSHNIKOV, G.Kh.; SHTAKEL'BERG, A.A.; PUKHAL'SKAYA, L.F., red.izd-va; KRUGLIKOVA, N.A., tekhn.red.

[Insect pests of corn in the U.S.S.R.; reference book] Nasekomye, vrediashchie kukuruze v SSSR; spravochnik. Moskva, 1960. 227 p. (MIRA 13:3)

1. Akademiya nauk SSSR. Zoologicheskiy institut. 2. Zoologicheskiy institut AN SSSR (for Arnol'di, Borkhsenius, Gur'yeva, Derbeneva, Yemel'yanov, Kerzhner, Kuznetsov, Mishchenko, Narchuk, Shaposhnikov, Shtakel'berg). 3. Vsesoyuznyy institut zashchity rasteniy Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk imeni V.I.Lenina (for Lisina, Shapiro).
(Corn (Maize)--Diseases and pests)
(Insects, Injurious and beneficial)

DERIENEVA, N.N.

Biology and postembryonic development of the sage thrips Taeniothrips fodorovi Priesner (Thysanoptera, Thripidae). Ent. oboz. 41 no.2:322-333 '62. (MIRA 15:11)

1. Zoologicheskiy institut AN SSSR, Leningrad.
(Crimea--Thrips)
(Sage--Diseases and pests)

ACCESSION NR: AP4017717 S/0294/63/001/003/0376/0385

AUTHORS: Kudryavtsev, Ye. M.; Gippius, Ye. F.; Derbeneva, S. S.; Pechenov, A. N.; Sobolev, N. N.

TITLE: Determination of the matrix element of the dipole moment of the electronic transition of the cyan violet band system. III

SOURCE: Teplofizika vy*sokikh temperatur, v. 1, no. 3, 1963, 376-385

TOPIC TAGS: cyan, cyan band system, cyan violet band system, dipole moment, matrix element, integral absorption exponent, internuclear distance, dissociation energy, electronic transition

ABSTRACT: This is a continuation of previously reported research (Teplofizika vy*sokikh temperatur v. 1, 73 and 218, 1963) and is devoted to the actual determination of the square of the matrix element of the dipole moment of the electronic transition $|R_e|^2$ from the measured integral absorption exponents of the rotational line of

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ACCESSION NR: AP4017717

the sequences $\Delta v = 0$ and $\Delta v = -1$ of the violet system of CN bands. The value obtained for the $|R_e|^2$ was found to be 0.38 atomic units and to be independent of the internuclear distance of the transitions. The over-all error in the measurements due to imperfections in the spectral instrument and failure to take complete account of the skirts of the lines is less than 10%, since the half-width of the rotational line exceeds or is equal to the half-width of the apparatus function under the experimental conditions. The value obtained for $|R_e|^2$ is in satisfactory agreement with the values obtained earlier by other methods. A value of 7.6 eV is obtained for the dissociation energy of CN from the present results and those by others. Orig. art. has: 6 figures, 7 formulas, and 3 tables.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR)

Card 2/2

ACCESSION NR: AP4042997 S/0051/64/017/001/0149/0151

AUTHORS: Batsanov, S. S.; Derbeneva, S. S.

TITLE: Infrared spectra of strontium and lead nitrates pressed into various media

SOURCE: Optika i spektroskopiya, v. 17, no. 1, 1964, 149-151

TOPIC TAGS: ir spectrum, strontium compound, lead compound, polycrystal, absorption band, refractive index

ABSTRACT: The research was undertaken to determine the proper choice of immersion media for the investigation of the infrared spectra of polycrystalline samples, and to ascertain the dependence of the form and intensity of the absorption band on the difference between the refractive indices of the studied sample and the medium. The infrared spectra of the powdered strontium and lead nitrates were obtained with an UR-10 spectrometer in the 400--2200 cm^{-1} range.

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ACCESSION NR: AP4042997

The samples were prepared by pressing 3 mg of Sr or Pb nitrate in 800 mg of KCl, KBr, KI (or CsCl), CsI, CuCl, AgCl, TlCl, and TlBr. The results show that the intensity of the valence vibration band decreases noticeably with increasing difference in the refractive indices, and not have a maximum when this difference is equal to zero, but when the immersion medium has a refractive index somewhat higher than the investigated substance. With increase in intensity, the shape of the absorption band changes in that the low-frequency skirt of the line drops systematically, while the high-frequency skirt rises. This is the result of the change in the refractive index of the substance in the absorption band. The variation in the intensity is attributed to a reduction in the background of diffuse scattering and to an increase in transmission. It is suggested that the dispersion of crystals can be determined from their infrared absorption spectra. Orig. art. has: 2 figures and 1 table.

ACCESSION NR: AP4042997

ASSOCIATION: None

SUBMITTED: 09Oct63 ENCL: 00

SUB CODE: OP, IC NR REF SOV: 000 OTHER: 002

3/3

L 61679-65

ACCESSION NR: AP5011112

crystals and the immersion medium (Δn_0) has two maxima, one corresponding to the minimum of n_0, and the other lying in the region of the higher refractive index. These maxima are tentatively attributed to the maxima on the anomalous-dispersion curves of uniaxial crystals. Arguments in favor of this assumption are presented. The results must be taken into account in comparisons of the intensities of IR spectra of powders of different compositions. Orig. art. has: 6 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 31Mar64 ENCL: 00 SUB CODE: OP

NR REF SOV: 001 OTHER: 000

Card 2/2

L 6179-65 EWT(l)/EWT(m)/EEC(t)/T/EWP(t)/EWP(b)/EED(b)-3 Pl-4 IJP(c) JD
ACCESSION NR: AP5011112 UR/0051/65/018/004/0599/0602
535.34-15

AUTHOR: Batsanov, S. S.; Derbeneva, S. S.

TITLE: Infrared spectra of anisotropic carbonates pressed in various media

SOURCE: Optika i spektroskopiya, v. 18, no. 4, 1965, 599-602

TOPIC TAGS: ir spectrum, uniaxial crystal, absorption spectrum, anisotropic carbonate, absorption maximum

ABSTRACT: This is a continuation of earlier work by the authors (Opt. i spektr. v. 17, 149, 1964), in which it was shown that the intensity and shape of the NO_3 ion valence oscillation band depends in regular fashion on the refractive index of the medium in which the samples are contained. The present work is an extension of the research to include anisotropic carbonates. IR spectra were obtained of crystalline powders of $CaCO_3$, $PbCO_3$, and $MgCO_3$ pressed in KCl, KBr, CsCl, CsI, CuCl, AgCl, TlCl, and TlBr. The spectra were obtained with an UR-10 spectrometer. Plots of the spectra are presented and the intensity maxima are tabulated. The results show that the intensity plotted against the difference of the refractive media of the

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REEL #101

FROM: Demin, N.G.

To: DERBENEVA, S.S.